REMARKS

Claims 1-49 are currently pending. Claims 34-49 are withdrawn from prosecution. In the Office Action dated December 6, 2005, claims 1, 5, 8-13, 15, 16, 20-28, 31 and 32 are rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent Application Publication No. 2003-0232495 of Moghadam et al. Claims 3, 4, 6, 7, 14, 17, 18, 19, 29, 30 and 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moghadam in view of U.S. Patent No. 6,450,116 to Noble. Claims 3 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moghadam and Noble in view of U.S. Patent No. 6,806,211 to Shinriki.

§ 102 Rejections

First, applicants respectfully traverse the rejection of claim 1 as anticipated by Moghadam, for at least the reason that substantive claim elements that distinguish this claim from Moghadam were improperly not considered. For example, in the Office Action at page 4, lines 1-5, it is asserted that the recitation of claim 1 for the instructions to be executable to "deposit the gas phase monomer on the first adhesion promoter layer for a second interval to form the low dielectric constant polymer layer ([0126]) and deposit the silane ([0126]) precursor on the low dielectric constant polymer layer ([0126]) for a third interval to form the second silane-containing layer" is a claim limitation of intended use of the apparatus claim.

Applicants respectfully traverse this assertion. According to MPEP § 2106, if the difference between the prior art and the claimed invention includes descriptive material stored on or employed by a machine, it must be determined whether the descriptive material is functional descriptive material or nonfunctional descriptive material. Functional descriptive material is a limitation in the claim and must be considered and addressed in assessing patentability. Furthermore, according to MPEP § 2106, functional descriptive material includes data structures

and computer programs which impart functionality when employed as a computer component. MPEP § 2106 further recognizes instructions that control or effect "post-computer processing activity" to be functional descriptive material that must be considered in assessing patentability.

The executable instructions stored in the memory recited in claim 1 and executable by the processor of claim 1 are functional descriptive material, and not a limitation of intended use. This is at least for the reason that the executable instructions of claim 1 impart the functionality of "post-computer processing activity" to perform the substrate processing recited in claim 1. To clarify this point, claim 1 is amended herein in such a manner as to emphasize the structural and functional interrelation of these claim elements as contemplated by MPEP § 2106. Because the executable instructions are functional descriptive material, the recited acts controlled by the executable instructions must be considered in addressing patentability.

Turning to the prior art cited against claim 1, Moghadam does not disclose instructions stored on a memory and executable by the processor to control a silane delivery system to deposit the silane precursor on the substrate for a first interval to form the first silane-containing layer, to control a process module to deposit the gas phase monomer on the first adhesion promoter layer for a second interval to form the low dielectric constant polymer layer, and to control the silane delivery system to deposit the silane precursor on the low dielectric constant polymer layer for a third interval to form the second silane-containing layer. Instead, Moghadam discloses (for example, at paragraph [0052]) depositing organo-silicon compounds, or mixtures or organo-silicon compounds and some specific hydrocarbons, and then processing the organo-silicon compounds via an e-beam treatment. Where Moghadam discloses depositing an organo-silicon compound and a hydrocarbon, the compounds are disclosed as being deposited via a mixture, rather than in discrete, separate intervals. Therefore, Moghadam does not disclose all of

the elements of claim 1. For at least this reason, claim 1 is not anticipated by Moghadam. Applicants therefore respectfully request this rejection to be withdrawn. Furthermore, claims 5, 8-13, 15, 16, 20-23 depend from and include all of the elements of claim 1, and are therefore also not anticipated by Moghadam.

Next, applicants also respectfully traverse the rejection of claim 24 as anticipated by Moghadam. Nevertheless, applicants herein amend claim 24 to recite, in part, a system for depositing a composite polymer dielectric film on a substrate comprising a process module for forming the low dielectric constant polymer layer, wherein the process module includes a deposition chamber and a substrate holder configured to hold and cool a substrate during a deposition process, a monomer delivery system comprising a polymer film precursor source in communication with the deposition chamber and a reactor positioned between and in communication with the precursor source and the deposition chamber, a post-treatment module for annealing the composite polymer dielectric film, wherein the post-treatment module includes a heat source for heating the substrate and processing gas delivery system for delivering a reducing gas to the post-treatment module, a silane deposition module for depositing the first adhesion promoter layer and the overlayer, wherein the silane deposition module includes a silane deposition chamber and a silane delivery system for delivering a silane precursor to the silane deposition chamber, an ultraviolet light source disposed in at least one of the process module, the post-treatment module and the silane deposition module, and a transfer module disposed between the process module, the silane deposition module and the post-treatment module, wherein the transfer module includes a substrate transport mechanism for transferring a substrate between the process module and the post-treatment module. Applicants also cancel claim 25 and amend claim 29 accordingly.

In contrast, Moghadam does not disclose all of the elements of amended claim 24, either explicitly or inherently. For example, Moghadam does not disclose at least the elements of a monomer delivery system comprising a precursor source and a reactor, and an ultraviolet light disposed in at least one of the process module, the post-treatment module and the silane deposition module. Therefore, Moghadam does not anticipate amended claim 24.

In the Office Action at page 13, section iii, it is stated that the element of a reactor (which is herein added to claim 24 and further defined in claim 29) is a claim requirement of intended use. Applicants respectfully traverse this assertion. A reactor is a structure, and not a use. Furthermore, a reactor configured to generate a diradical from a precursor has particular structures that enable this chemical transformation to take place. For example, as disclosed at page 29, lines 18-20 of the present specification, such a reactor may be configured to chemically react with the leaving groups on a precursor molecule and to be periodically regenerated to remove bromine from the reactor. Therefore, the claim element of a reactor is not one of an intended use, and the element of a reactor configured to generate a diradical from a precursor is a structural element that further defines the reactor. Therefore, amended claim 24 is not anticipated by Moghadam. Furthermore, claims 26-28, 31 and 32 depend from and include all of the elements of claim 24, and are therefore also not anticipated by Moghadam. Applicants respectfully request withdrawal of these rejections.

§ 103 Rejections

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally,

the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2141.

Claims 3, 4, 6, 7, 14, 17, 18, and 19 are not obvious over Moghadam in view of Noble for at least the reason that this combination of references neither discloses nor suggests all of the elements of these claims. Each of these claims depends from claim 1. As discussed above in regards to the § 102(e) rejection of claim 1, Moghadam does not disclose or suggest a system for depositing a composite dielectric film comprising instructions stored on a memory and executable by the processor to control a silane delivery system to deposit the silane precursor on the substrate for a first interval to form the first silane-containing layer, to control a process module to deposit the gas phase monomer on the first adhesion promoter layer for a second interval to form the low dielectric constant polymer layer, and to control the silane delivery system to deposit the silane precursor on the low dielectric constant polymer layer for a third interval to form the second silane-containing layer.

Furthermore, Noble also does not disclose or suggest these elements. Instead, Noble discloses a plasma processing system including separate chambers for generating a plasma and treating the substrate with the ions generated by the plasma. Noble does not disclose or suggest in any manner depositing a silane precursor for a first interval, a gas phase monomer for a second interval, and a silane precursor for a third interval. Therefore, for at least this reason, claims 3, 4, 6, 7, 14, 18, and 19 are not obvious over Moghadam in view of Noble, and are in condition for allowance.

Likewise, claims 3 and 19 are not obvious over Moghadam in view of Noble and in further view of Shinriki. Like Moghadam and Noble, Shinriki fails to disclose or suggest at least the above-recited elements of claim 1. Instead, Shinriki discloses a processing system in which

processing gases are connected directly to the processing chamber (shown in Fig. 2), or which include a processing gas storing unit (shown at 260 in Fig. 14). Because the combination of Moghadam, Noble and Shinriki fails to disclose or suggest all of the elements of claims 3 and 19, these claims are not obvious over this combination of references. Applicants therefore respectfully request withdrawal of these rejections.

Next, applicants respectfully traverse the rejection of claims 29, 30 and 33 as obvious over Moghadam in view Noble. These claims depend from independent claim 24. As described above for claim 24, Moghadam does not disclose or suggest at least the elements of a polymer film precursor source in communication with the deposition chamber and a reactor positioned between and in communication with the precursor source and the deposition chamber for delivering a gas-phase diradical monomer to the deposition chamber. Instead, Noble discloses a plasma processing device with a first chamber for creating a plasma and a second chamber for processing a substrate with the plasma. The plasma is disclosed as being used to modify an inorganic film surface, rather than as being used to deposit a polymer film. Such a plasma is generally too energetic to selectively form the disclosed diradical monomers without undesirable amounts of coke formation. Therefore, the combination of Moghadam in view of Noble neither discloses nor suggests all of the elements of claims 29, 30 and 33. For at least this reason, these claims are not obvious over Moghadam in view of Noble. Applicants therefore respectfully request withdrawal of these rejections.

Applicants believe that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, Applicants respectfully request that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or

if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, to: Mail Stop AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on March 6, 2006.

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